

TRADE AND COMMERCE  
CANADA

SD-EA.82

## STANDARDS DIVISION

OTTAWA..... June 30, 1952.....

TYPE APPROVALBRISTOL TYPE PH560 "DYNAMASTER" RECORDING POTENTIOMETER

The apparatus specified and illustrated herein has been duly approved by the Standards Division under the provisions of The Electricity Inspection Act, Chap.22, 1928, as amended, and may be admitted to verification in Canada.

Apparatus Approved: Type PH560 "Dynamaster" Recording Potentiometer, manufactured by The Bristol Company, Waterbury, Conn., U.S.A., and distributed in Canada by The Bristol Company of Canada Limited, 71-79 Duchess Street, Toronto 2, Ontario.

Rating of Apparatus: Input - The instrument may be adapted to operate on practically any variable D.C. voltage input.

Power Supply: 120 volts; 25, 50 or 60 cycles

Chart: Strip-Chart 12 $\frac{1}{2}$ " wide; a variety of scales available

Chart Speeds: (see below)

Pen Travel Speeds: 20, 7, 3, 1.5 or 2/3 secs. for full scale travel

Record: Single continuous ink line; double printed dots

Description: The "Dynamaster" is a high-speed, continuous balance, null-type electronic instrument available as either a potentiometer or bridge. This approval covers its use in its potentiometer form.

The "Dynamaster" potentiometer, like any other potentiometer, is an instrument for measuring a voltage of unknown value by comparing it with an emf. of known value. When the two voltages are brought into balance, no current flows in the detector circuit. In this instrument the unknown emf. or voltage originates in some sensing element which is not part of the device. The known emf. is produced by a dry cell battery or constant voltage device. The unknown emf. developed by the sensing element is connected into the potentiometer circuit so as to oppose a portion of the slide-wire voltage.

Balancing is automatically done by a two-phase balancing motor, which brings the potentiometer circuit into balance by adjusting a sliding contact on a slide wire. The operation of the balancing motor is controlled by the unbalance current flowing in the detector circuit. This current of unbalance, which is direct current, is first converted to an A.C. current by means of a synchroverter switch and then amplified by an electronic amplifier to produce enough power to satisfactorily operate the balancing motor. In addition to driving the sliding contact, the balancing motor also drives the recording and indicating mechanism to record and indicate the amount of the variable under measurement.

The "Dynamaster" is automatically standardized by periodically referring itself to a standard voltage cell; corrective action is automatically taken when necessary.

The record is made on a roll chart 12 $\frac{1}{2}$  inches wide with a calibrated scale width of 11 inches. A variety of charts is available. The range of an instrument can be changed by changing range resistors. The chart is driven by a synchronous motor. The following chart speeds are available: -  $\frac{1}{4}$ , 1, 1 $\frac{1}{2}$ , 2, 3, 4, 4 $\frac{1}{2}$ , 6, 9, 12, 18 and 24 inches per hour, and  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1, 1 $\frac{1}{2}$ , 2 $\frac{1}{2}$ , 3, 4 $\frac{1}{2}$ , 6, 15, 20, 30, 40, 60, 90 and 120 inches per minute.

Application: The use of this device for billing purposes is only permitted when it is used with an approved type of sensing device. Although other forms of the device not indicated above are available, such as multiple record (except the double record) and round chart types, they are not included in this approval. The potentiometer is approved for use unsealed.

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